Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 713104N **Date: 24-06-2014**

Subject Name: Bio-Signal Processing

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the basic need for conversion of biomedical signals and also discuss signal conversion circuits.	**07**
	(b)	Enlist the various types of digital filters and explain any one in detail.	**07**
Q.2	**(a)**	Derive the transfer function of a differential equation.	**07**
	(b)	Explain smoothing filters and Notch filters with necessary diagram.	**07**
		OR	
	(b)	Which filter is suitable for ECG analysis? Why?	**07**
Q.3	**(a)**	Discuss band pass and band reject filters and show the effect of filter in cascade mode.	**07**
	(b)	Explain adaptive filters and principle of noise canceler mode.	**07**
		OR	
Q.3	**(a)**	Explain basics of signal averaging and also discuss limitations of signal averaging.	**07**
	(b)	Enlist the various data reduction techniques and explain any one in detail.	**07**
Q.4	**(a)**	Describe AXEC algorithm with suitable example.	**07**
	(b)	Write a note on CORTES.	**07**
		OR	
Q.4	**(a)**	Explain turning point algorithm with suitable example.	**07**
	(b)	Explain Huffman algorithm and also mention application of it.	**07**
Q.5	**(a)**	Draw and explain power spectrum of ECG.	**07**
	(b)	Write a note on QRS detection algorithm.	**07**
		OR	
Q.5	**(a)**	Describe template matching techniques.	**07**
	(b)	With suitable diagram, explain ECG analysis system.	**07**

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